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these, in connection with the Orcutt and La Jolla localities, to quote the comments of Dr. White,\* 'seem to represent the fauna of a cretaceous formation, which has not heretofore been recognized,' though Dr. Trask's assignment of his species of '*Plagiostoma*' to the Cretaceous should be borne in mind.

Examples of *Radiolites Hamlini* have also been met with in the Broadway tunnel excavation. These tunnels which are several blocks apart, run in different directions; that on the line of Third street being an east-and-west tunnel, while the Broadway, follows a northerly and southerly course; both penetrate the high ridge overlooking the city, known as Fort Hill, the site of the earthworks thrown up by Fremont at the time of the 'conquest' of Southern California.

The clays excavated on Shatto Heights in the preparation of a site for the Shatto mansion on Orange street are perhaps of a later age than those of the tunnels. The Shatto clays contained shells and sharks' teeth; the former were not saved by Mr. Shatto, and were covered up by the graders just before my visit in 1887.

ROB'T E. C. STEARNS.

LOS ANGELES, June 12, 1900.

#### THE ROYAL COLLEGE OF SURGEONS.†

THIS year marks the completion of a century since the Royal College of Surgeons received its Royal charter of incorporation from George III.; and the centenary of that event, which, to be precise, happened March 22, 1800, has just been celebrated. But, though the present corporation can only claim a lifetime of 100 years, it can count its descent in a direct line back to a much more remote antiquity, for a Guild of Surgeons, whether technically incorpor-

\* Vide Bulletins 15 and 18, U. S. Geological Survey.

† From the London *Times*.

ated or not, seems to have been in existence in London more than six centuries ago, and to have existed ever since in one form or another. In 1368 mention occurs of the surgeons as a distinct body; and the license without which they could not, apparently, practice in the City of London enjoins upon them, among other things, that they serve the people well and truly in their cures and only charge reasonable fees. The association of barbers and surgeons also dates from the same early times, and seems to have been a result of ecclesiastical influence. It would naturally be supposed that the Church would be the repository of the surgical knowledge of the day, just as it was of other science and art, and such indeed appears to have been the case until Innocent III. forbade priests to perform surgical operations, on the ground that the Church 'abhoret a sanguine.' But the prohibition was not sufficient to make them give up all attempts to control surgical practice, and when they were shut off from employing direct methods they had recourse to indirect ones. They began to 'push' the barbers—a class of men of whose services they had, of course, constant need, and who were in the habit of performing minor surgical operations—and gradually erected them into a fellowship of barber-surgeons, a Barbers' Guild being referred to as early as 1308 in the records of the City of London. As may easily be imagined, the cry of unqualified practitioners soon made itself heard, and various regulations were asked for to prevent unskilful persons from practicing the art both by the surgeons and by the better sort of barber-surgeons, who evidently became differentiated from the others who were barbers pure and simple.

Among the most important events in the history of this Guild of Surgeons were its combination with the physicians and the incorporation, about 1423, of the two into one distinct body to control all persons en-

gaged in the practice of medicine and surgery. This commonalty of physicians and surgeons drew up elaborate regulations for the guidance of its members in the exercise of their profession, and sought to improve the standard of their knowledge by requiring them to pass examinations before they could be admitted to practice ; but it cannot have been a great success, for in a few years all traces of it disappear, and the previous chaotic state of affairs is re-established. About 1423 the Guild of Surgeons is heard of as a separate body making stringent professional regulations for its members, while in 1461 the Barbers' Company obtained a Royal Charter, in which various rights and privileges concerning the mystery or craft of surgery were confirmed to it, without any mention of the Guild of Surgeons. But the latter was far from extinct. In 1492 it obtained a grant of arms, the original of which is still in the Barbers-hall, and in 1511 it was concerned in getting an Act passed which restricted any one from practicing in the City of London or within seven miles of it unless examined and approved by the Bishop of London, or the Dean of St. Paul's assisted by professional assessors. But the surgeons got little thanks for their pains ; they were accused of 'minding only their own lucre' and vexing 'divers honest persons, as well men as women, whom God hath endued with that knowledge of the nature, kind and operation of certain herbs, roots and waters,' and in the end the statute was so modified as to be practically, abrogated. In 1540 the surgeons and the barbers were united into one company, both, as the Act says, exercising surgery, but the latter incorporated, the former not. The privileges granted to the barbers by their charter were confirmed and others were added—*e.g.*, they were allowed to take the 'Bodyes of ffoure condemned persons yerely for Anatomies,' while it was also enacted that

"no manner of person within the City of London, suburbs and one mile therefrom using any barbery shall occupy any surgery, letting of blood, or any other thing belonging to surgery except drawing of teeth, nor any practising of surgery shall use any shaving." This shows clearly that, though the company was a union of the two bodies, the two professions were not merged together. At the same time constant efforts were evidently needed to keep them distinct, and the surgeon part of the company was often troubled by attempts on the part of the barbers to usurp its functions. But the arrangement subsisted for over 200 years, in spite of monetary embarrassments, difficulties in coping with quackery, and disputes with the physicians, who objected to the surgeons giving internal medicines and declined to consult with them. In time, however, it began to be felt that the 'union of the surgeons with the persons altogether ignorant of the science or faculty of surgery (as the Barbers are)' was not an advantage, and in 1684 a petition was presented for the dissolution of the company. This was unsuccessful, and it was not till 1745 that a Bill to make the barbers of London and the surgeons of London separate and distinct corporations was agreed to by Parliament and received the Royal assent.

The proper style of the new corporation was the 'Masters, Governors, and Commonality of the Art and Science of Surgery.' It consisted of 21 assistants, of whom one was master, two were wardens, and ten were examiners. The master and wardens were elected annually ; but the assistants were appointed for life from the freemen. One of the first acts of the company, which was not able to take anything from the Barber-surgeons in the way of hall, books, or plate, was to lease a piece of ground in the Old Bailey—conveniently contiguous to Newgate—and erect a lecture

theater thereon. This was first used in 1751, the meetings of the court of assistants being meanwhile held in the hall of the Stationers' Company. The company started in favorable circumstances; its fees were lower than was possible in the old company, and its members were relieved from the onerous and expensive civic offices which formerly they were liable to serve. But for all that it did not prosper very greatly the cause being to a large extent mismanagement. At first its available funds were scanty, and in 1780 it was nearly insolvent. A new clerk, who was engaged at this time, affected a great change in this respect; but as the finances improved new methods of spending money were discovered—*e. g.*, assistants attending punctually at the meetings of the court were rewarded with half-a-crown, later with half-a-guinea, while meetings of the courts, in some years held almost once a fortnight, were supplemented with expensive dinners at the sole cost of the company. Yet while this sort of thing was going on the lecture theater was without lectures, and the library without books. In 1796 the buildings were found to be very much out of repair, and it was suggested that rather than spend money on them it would be better to sell the lease of the land on which they stood and purchase freehold ground elsewhere on which to erect new premises. Accordingly bids were invited, but at the very meeting at which it was announced that no one of them reached the amount fixed on, the company, by a final act of mismanagement, succeeded in destroying itself. On July 7, 1896, a court, not constituted according to the Act, assembled and transacted business, the result being to determine the corporation's legal existence. Attempts were made to legalize the irregularity by a new Act which also conferred new powers, but they were defeated by the opposition of persons

who were in practice without holding the diploma of the company. In the meantime the property in the Old Bailey was sold and a freehold house in Lincoln's-inn-fields—on the site of which stands part of the present Royal College—was purchased. But, as the result of the rejection of its Bill, the company found itself very awkwardly situated, for its business was at a standstill, it could hold no examinations, and many of its members declined to pay their dues. Ultimately a compromise was affected between the court of assistants and the opponents of the Bill, and it was agreed that a new Act should be sought converting the old company into a college. All practitioners in England and Wales were to be subject to its examinations, lectures on anatomy were to be given on a more extended scale, and a library and museum were to be formed. After these terms had been arranged it occurred to some one that a Royal charter was preferable to an Act of Parliament. Accordingly a charter was sought and granted, March 22, 1800.

In this way was constituted the 'Royal College of Surgeons in London,' for the promotion of the study and practice of the art and science of surgery. The number of members in 1800 was about 230, all those who belonged to the old company having the right to become members, though subsequent candidates for membership had to pass a prescribed examination. The court of examiners, whose members held office for life, had also to examine all Army and Navy surgeons, their assistants and mates, and also to inspect their instruments. This constitution remained practically unaltered until 1843, the changes introduced by the supplementary charter of 1822 being merely the substitution of the titles of president and vice-presidents for the old ones of master and governors, and the permission to the college to hold

land and rents in mortmain to the annual value of £2000 instead of £1000. It was not, however, completely satisfactory to the general body of members, and it was felt to be somewhat too narrow and oligarchical in character. The governing body, though it had very great authority in the affairs of the college, was small and self-elected, and its members held their position for life; it was composed of surgeons connected with the metropolitan hospitals, and teachers in private and provincial schools did not think they enjoyed all the privileges to which they were fairly entitled. But, though a Parliamentary committee investigated the matter in 1834, nothing was done until 1843, when a new charter established a more democratic form of government. The title was altered to the Royal College of Surgeons of England, and a new class of 'Fellows' was created. The council, which was to be selected from among these, was increased to 24, and the three senior members were to retire every year, though they were eligible for re-election. No Fellow practicing pharmacy or midwifery could be on the council. The constitution of the court of examiners also was altered; its members were to be selected from the general body of Fellows and not exclusively, as formerly, from the council, while the office was to be held not for life but at the pleasure of the council. The charter ordained that between 250 and 300 members should be selected to be Fellows within three months, and it gave the council further powers to appoint a number of other members to be Fellows within the succeeding nine months. The first Fellows, of whom three still survive, were appointed on December 11, 1843, mainly from the surgeons and lecturers at metropolitan and provincial hospitals, while in August, 1844, a further batch of 242 were selected, including a number of representatives of the naval, military and

Indian forces. Of these also three survive. All subsequent Fellows were admitted only after examination. Some slight modification of these arrangements was brought about by the charter of 1852, which gave the council power to elect members of 15 years' standing to the Fellowship without examination, provided they had obtained their diplomas of membership before 1843; also to elect two Fellows annually who were members of over 20 years' standing without restriction as to the date of their diplomas. A supplementary charter in 1859 regulated the appointment of examiners in dental surgery, and a fresh one in 1888 increased the annual value of the land that might be held by the college to £20,000. The final modification in the constitution took place this year, when the council was empowered to elect honorary Fellows to a number not exceeding 50. The first of these is the Prince of Wales.

Since 1800 there have been 61 masters or presidents of the college, who have included the most distinguished surgeons of the time. The great majority only held office for a year, but in six cases the term was three years and in one four; Sir William MacCormac, therefore, who is now the president, has exceeded all his predecessors in length of service, for the present centenary year marks his fifth year of office. John Hunter, perhaps the greatest surgeon that has ever lived, was never a member of the college, because he died before its incorporation; yet he may be accounted its greatest ornament. His famous anatomical collections, greatly enlarged, but still arranged on the simple plan he devised, are housed within its walls. At his death Parliament, tardily enough, voted £15,000 for their purchase and entrusted them to the keeping of the old Corporation of Surgeons. When this was dissolved they were handed over to the custody of the present college, which has proved itself worthy of the trust. The

museum as Hunter left it contained 13,682 preparations arranged in two divisions—normal structures and abnormal structures ; now the number of preparations has been doubled, though the museum is still only an expansion of Hunter's. Over and over again—notably in 1835, 1847, and 1888—the college has added new buildings to accommodate the ever-increasing collections, and in the successive conservators it has appointed—W. Clift, Richard Owen, J. T. Quekett, William Flower and Charles Stewart—it has had the good fortune to find men of the highest scientific attainments who have watched over them with unceasing care. To the first of these, admirers of Hunter are specially indebted, for he was the means of preserving a great part of Hunter's anatomical writings. Originally included with the collections, they were borrowed by Sir E. Home, Hunter's executor, who used them for the manufacture of papers and lectures, to which he attached his own name, and then burnt them so as to remove the evidence of his dishonorable conduct. Clift, however, had made copious extracts from the MSS., and in this way an authentic record of about half their substance has been preserved. The college possesses many memorials of Hunter, including a very fine portrait of him by Sir Joshua Reynolds, his consulting chair, clock, pocket-scales, lancet-case, etc. His 'name and fame' are celebrated by a biennial 'Hunterian Oration,' while numerous Hunterian lectures are delivered in accordance with the conditions on which the collections were entrusted to the college. Another service rendered to the cause of surgical knowledge by the college is to be found in the splendid library it has formed and maintains. This originated in a small grant of £50 made at the very beginning of this century; it now contains 50,000 volumes, including journals and transactions of scientific societies. Finally, reference

must be made to the college's important share in examining and licensing physicians and surgeons to practice. This portion of its functions is carried on jointly with the Royal College of Physicians—a return to an arrangement 400 years old—the examinations being mostly held in the examination hall built on the Thames Embankment in 1886, at the joint expense of the two bodies. Here not only is medical knowledge tested but its sum increased, for the hall includes extensive laboratories for original research, where materials are supplied at the expense of the colleges to any of their Fellows or members who obtain permission to work in them. In addition anti-toxic serum is prepared for the hospitals of the Metropolitan Asylums Board and for various general and children's hospitals, the cost of the latter supply being defrayed by a grant from the Goldsmiths' Company.

#### THE DEVELOPMENT OF SURGERY.\*

ONE hundred years have passed since the charter granted by King George III. incorporated the surgeons of England into a Royal College, whereby the art and science of surgery might be the better cultivated and the commonweal of the people of this kingdom benefited.

We meet to-day in order to celebrate the centenary of our incorporation, and the occasion compels us to reflect how far the College has fulfilled its high mission and merited the public consideration and confidence it enjoys, and, as we believe, deserves to enjoy, through unselfish service to the State.

My first and most pleasant duty is to welcome our illustrious guests who have come from many and distant countries to do honor to our College. Amongst them

\* Address of welcome on the occasion of the centenary festival of the Royal College of Surgeons of England, delivered by the president, Sir Willam Mac-Cormac and published in the *British Medical Journal*.